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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,928	10/22/2001	Steven M. Knowles	10765-015001	8524

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EXAMINER	
MACARTHUR, VICTOR L	
ART UNIT	PAPER NUMBER
3679	7

DATE MAILED: 12/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/982,928	KNOWLES, STEVEN M.	
	Examiner	Art Unit	
	Victor MacArthur	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 December 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Drawings

The substitute drawings were received on 12/12/02. These drawings are acceptable.

Claim Rejections - 35 USC § 112

Claims 21-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 21 and 23, the phrase "the maximum dimension" is recited in line 17 of claim 21 and lines 26-27 of claim 23. There is insufficient antecedent basis for this limitation in the claim. Furthermore, it is unclear what elements define "the maximum dimension".

As to claims 21-27, the claims are unclear since they rely on reference character "D". The applicant is reminded that, while reference characters are allowable within the claims, the claim language should particularly point out and distinctly claim the subject matter without having to refer to the drawings via reference characters.

Claims 22 and 24-27 depend from rejected claims 21 and 23.

Claim Rejections - 35 USC § 103

Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4776617 to Sato (see marked up copy).

Regarding claims 1, 11 and 12, Sato discloses (figs.8 and 9) a flexible joint assembly for conducting a fluid, comprising: a joint assembly inlet (201a); a joint assembly outlet (201b); and a fluid flow path between the inlet and the outlet, the fluid flow path including: a first pivot joint (200a, 203a); a second pivot joint (200b, 202b); and a central fluid conductor (204a) fluidly coupling the pivot joints, wherein the pivot joints together appear (A) to be capable of providing greater than 60° bend between the inlet and the outlet. Sato does not explicitly state that the pivot joints together provide greater than a 60° bend; however, a greater than 60° bend (A) is within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion of the bend of Sato's pivot joints together to be greater than 60° as such practice is a design consideration within the skill of the art.

As to claim 2, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 1 wherein each of the first pivot joint and second pivot joint independently comprises a ball and socket joint.

As to claim 3, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 2 wherein each ball and socket joint comprises: a socket (203, 203a); a ball (200a, 200b) received in the socket; and a seal (300) between the ball to the socket.

As to claim 4, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 3 wherein each ball and socket joint further comprises a compressing member (400) axially compressing the seal between the ball and the socket.

As to claim 5, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 4 wherein each compressing member comprises a retaining ring (ring portion of 400 in contact with seal (300) compressing the seal between the ball and the socket.

As to claim 6, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 1 wherein the central fluid conductor (204a) couples to the first ball (200a) of the first pivot joint and couples (via 202b) to a second ball (200b) of the second pivot joint.

As to claim 7, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 1 wherein the first pivot joint and the second pivot joint together appear (A) to be capable of providing a substantially 90° bend between the inlet and the outlet. Sato does not explicitly disclose the bend as being exactly 90°; however, a 90° bend is within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion of the bend of Sato's pivot joints together to be 90° as such practice is a design consideration within the skill of the art.

As to claim 8, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 1, wherein the central fluid conductor (204a) is unitary (since it is of one piece construction).

As to claim 9, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 1. Sato does not explicitly disclose the central fluid conductor as being shorter than 10 centimeters;

however, a conductor shorter than 10 centimeters is within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion of the central fluid conductor of Sato to be shorter than 10 centimeter as such practice is a design consideration within the skill of the art.

As to claim 10, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 1 wherein the joint assembly inlet and the joint assembly outlet include a fitting.

As to claim 13, Sato discloses (figs.8 and 9) a flexible joint assembly comprising: a joint assembly inlet (201a); a joint assembly outlet (201b); and a fluid flow path between the inlet and the outlet, the fluid flow path including: a first pivot joint (200a, 203a); a second pivot joint (200b, 202b); and a central fluid conductor (204a) fluidly coupling the pivot joints, each of the first pivot joint and second pivot joint including: an inner member (ball portions of 200a, 200b); a receiving member (203, 203a) dimensioned to pivotally receive at least part of the inner member; a sealing member (300) sealing between the inner member and the receiving member; and a supporting member (400) supporting the sealing member substantially uniformly over the entire length of the seal between the inner member and the receiving member.

As to claim 14, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 13 wherein each sealing member (300) comprises an annular seal having a first surface.

As to claim 15, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 14 wherein each supporting member comprises an annular support (portion of 400 in contact with

seal 300) having a second surface configured to mate with the first surface of the annular seal thereby supporting the annular seal substantially uniformly.

As to claims 16 and 17, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 13 wherein: each receiving member comprises a first engagement surface (thread containing surfaces of 203, 203a); and each supporting member (400) comprises a second engagement surface (thread containing surface of 400), wherein the first engagement surface is configured to engage the second engagement surface to maintain a fixed relative position between the receiving member and the supporting member.

As to claim 18, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 13. Sato does not explicitly disclose each sealing member as being comprised of an elastomeric material; however, an elastomeric material is within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that selection of a known material based upon its suitability for the intended use is a design consideration within the skill of the art. In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). The use of elastomeric materials for seals is well known. Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use an elastomeric material to construct the seal of Sato as such practice is a design consideration within the skill of the art.

As to claim 19, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 13 wherein: each inner member comprises a ball; each receiving member comprises a socket; and each sealing member comprises an O-ring sealing the ball to the socket.

As to claim 20, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 19 wherein the O-ring has an inner diameter greater than 90% of the diameter of the ball.

As to claim 21, Sato discloses (figs.8 and 9) a flexible joint assembly comprising: a joint assembly inlet (201a); a joint assembly outlet (201b); and a fluid flow path between the inlet and the outlet, the fluid flow path including: a first pivot joint (200a, 203a) configured to pivot about a first pivot (center of 200a); a second pivot joint (200b, 202b) configured to pivot about a second pivot (center of 200b); and a central fluid conductor (204a) fluidly coupling the first pivot joint and the second pivot joint, each of the first pivot joint and the second pivot joint including: an inner member (ball portion of 200a, 200b) having a dimension [a dimension (D) of any magnitude between zero and infinity—for instance a dimension equal to 4 times the diameter of the inner member) in a direction substantially normal to a path (any path (P) through 201a and 201b—not necessarily a fluid path) through each of the pivot joint assemblies' inlet and outlet; a receiving member (203, 203a) dimensioned to receive at least part of the inner member; and a sealing member (300) sealing the inner member to the receiving member at a distance (any distance—for instance a distance less than 14% of 4 times the diameter of the inner member) of less than 14% of a maximum dimension (D) from the respective pivot. The examiner notes that the limitations " a dimension (D)" and "a path" are claimed broadly enough to include virtually any magnitude and direction provided "a dimension (D)" is normal to "a path" and "a path" runs through the joint assembly inlet and outlet.

As to claim 22, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 21 wherein: the first pivot is a pivot point; the second pivot is a pivot point.

As to claim 23, as noted in the rejection of claim 21, Sato discloses (figs.8 and 9) all of the limitations of claim 23 that are present in claim 21. Furthermore, the fluid flow path includes: a first pivot joint (200a, 203a) configured to pivot over a first arc about a first pivot

(center if 200a); a second pivot joint (200b, 202b) configured to pivot over a second arc about a second pivot (center of 200b); and a central fluid conductor (204a) fluidly coupling the pivot joints, each of the first pivot joint and second pivot joint including: a received joint member (200a, 200b) having a dimension (D) in a direction substantially normal to a path (P) through each of the pivot joint assemblies' inlet and outlet; and a receiving joint member (202b, 203a) dimensioned to pivotally receive at least part of the received joint member, wherein: either the received joint member (200a, 200b) is coupled to one of the joint assembly inlet (201a) and the joint assembly outlet (201b) and the receiving joint member (202b, 203a) is coupled to the central fluid conductor (204a), or the receiving joint member (202b, 203a) is coupled (via 200a, 200b) to one of the joint assembly inlet (201a) and the joint assembly outlet (201b) and the received joint member (200a, 200b) is coupled (via 203a, 202b) to the central fluid conductor (204a); and a contact point (where 203a contacts 204a and where 202b contacts 204a) between each receiving joint member and the central fluid conductor whereby the pivot joint is fully pivoted over the respective arc being within 75% of a maximum dimension (D) distant from the respective pivot. The examiner notes that the limitations "a dimension (D)" and "a maximum dimension (D)" are claimed broadly enough to include a dimension of any magnitude.

As to claims 24 and 25, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 23 wherein each receiving joint member extends less than 30% of a dimension (D) (of any magnitude) centrally beyond the respective pivot.

As to claim 26, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 23 wherein each of the first pivot and the second pivot is a pivot point (center of 200a, 200b).

As to claim 27, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 23 wherein each receiving joint member (203a, 202b): is coupled to one of the joint assembly inlet (201a) and the joint assembly outlet (201b); and defines a chamber in communication with the central fluid conductor (204a), the chamber being dimensioned to subsume an at least 115° arc (A) about the respective pivot.

As to claim 28, Sato discloses (figs.8 and 9) a flexible joint assembly comprising: a first ball (200a) and socket (203a) joint; a second ball (200b) and socket (203, 202b) joint; and a unitary central fluid conductor (204a) connecting the first ball and socket joint and the second ball and socket joint. Sato does not explicitly state what pressures the joint is configured to withstand; however, pressures of 200 to 5000 PSI are within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion (thickness of elements) of the joint of Sato to allow for pressures of 200 to 5000 PSI as such practice is a design consideration within the skill of the art.

As to claim 29, Sato discloses (figs.8 and 9) the flexible joint assembly of claim 28 wherein each of the first ball and socket joint and second ball and socket joint comprises: a sealing member (300) between the ball and the socket; and a supporting member (400) contacting the sealing member substantially uniformly over the entire length of the seal between the ball and the socket.

Response to Arguments

Applicant's arguments filed on 12/12/02 with regard to the claim rejections have been fully considered but they are not persuasive.

112 Rejections:

The applicant argues, "Dimension D is defined by the claim language. It is the dimension of the inner member normal to the inlet to outlet flow path at any point along the flow path". The examiner agrees that the claim language defines dimension D and withdraws the rejection. However, the claim language defines dimension D much more broadly than the applicant argues. For instance, lines 11-12 of claim 21 recite "a dimension (D) in a direction **substantially** normal to **a path** through each of the pivot joint assemblies' inlet and outlet". This language allows for a dimension of any magnitude in a direction only **substantially** normal to any path through the pivot joint assemblies (not necessarily a flow path).

103 Rejections:

The applicant argues that Sato does not disclose a bend of greater than 60° between inlet and outlet". This is not persuasive since figure 9 of Sato clearly shows (see marked-up copy) an angle (A) between the centerline of an inlet (201a) and the centerline of an element (202a) that appears to be well in excess of 60° and figure 8 shows that the element (202a) is capable of being positioned parallel to an outlet (201b). Therefore, the inlet is fully capable of forming an angle with the outlet in excess of 60°.

The applicant argues that the element (fig. 8, ref.300) referred to by the examiner in the marked-up copy of USPN 4776617 to Sato is not a sealing element but rather an annular packing analogous to elements (14a, 14b). This is not persuasive since an annular packing is a type of sealing element. Furthermore, inspection of figure 8 reveals that the only element preventing fluid leakage from between elements 200a and 203a is the element (300). Sato suggests (col.4, ll.4-7) the sealing nature of packings by stating "the packing 14a (14b) seals between the bulging tube end portion and the joint socket regardless of the ..."

The applicant argues, "Sato... does not disclose a joint assembly that includes a contact point between each receiving joint member and the central fluid conductor whereby the pivot joint is fully pivoted over the respective arc within 75% of the maximum dimension D distant from the respective pivot." This is not persuasive since there is no antecedent basis for the limitation "maximum dimension D" thereby rendering the claims in question to be indefinite. Furthermore, if the "maximum dimension D" is meant to refer to the "dimension D" than Sato meets the above-argued limitation since "dimension D" is claimed broadly enough to include any magnitude.

The applicant argues, "Sato... does not teach, suggest or motivate one skilled in the art to use a unitary central fluid connector. This is not persuasive since figure 8 of Sato clearly shows element 204a to be a unitary central fluid connector since it is constructed as one piece; connects the first and second ball joints; and is hollow to allow for the flow of fluid within.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor MacArthur whose telephone number is (703) 305-5701. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (703) 308-1159. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9326 for regular communications and (703) 872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

VLM
December 25, 2002

Lynne H. Browne
Supervisory Patent Examiner
Technology Center 3600

FIG. 8
Prior Art

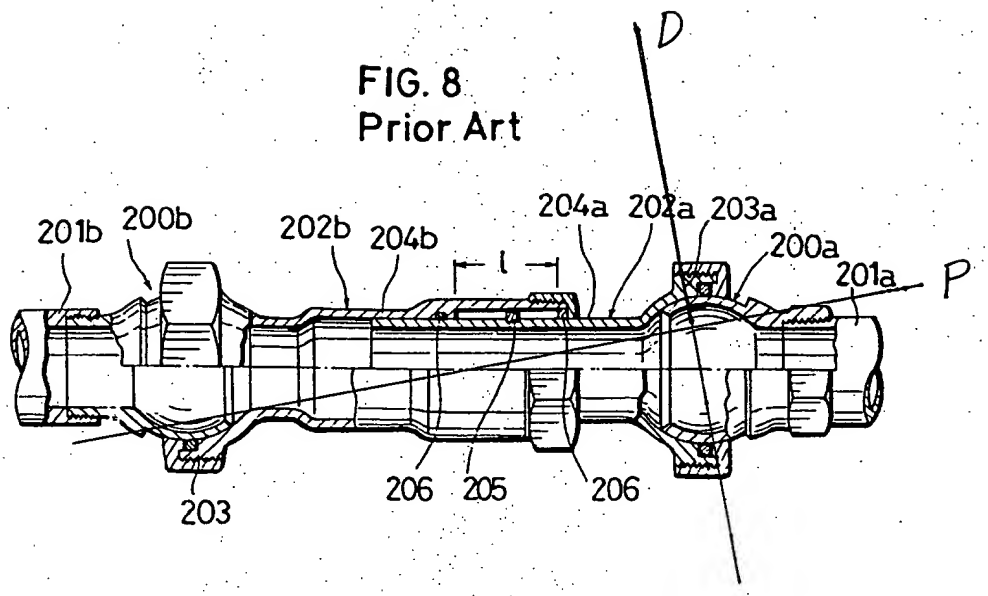

FIG. 9
Prior Art